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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Koji Moriuchi

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EXAMINER

FREEMAN, JOHN D

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,659	Applicant(s) MORIUCHI ET AL.	
	Examiner John Freeman	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 18-29 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 18 and 20-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishikawa et al. (JP 2001-264771).
3. Regarding claim 18:
4. Nishikawa et al. (hereafter Nishikawa) disclose a polyimide precursor having tetracarboxylic dianhydride, diamine, γ -butyrolactone, and N-methyl-2-pyrrolidone [0004].
5. The tetracarboxylic acid can include those conforming to Applicant's Formulas 1 and 2 [0005]. For example 3,3',4,4'-biphenyl tetracarboxylic dianhydride corresponds to Applicant's Formula 2. Also, 4,4'-bis(3,4-dicarboxy phenoxy)diphenyl sulfide dianhydride, 4,4'-bis(3,4-dicarboxy phenoxy)diphenyl propane dianhydride, correspond to Applicant's Formula 1. The latter corresponds to BPADA, even though it does not follow the traditional naming/numbering system of BPADA: 2,2-bis[4-(dicarboxyphenoxy) phenyl]propane dianhydride.
6. The diamine can be a diamino diphenyl sulfone [0007].
7. Regarding claim 20:
8. The examiner takes the position that a precursor made in the manner of Nishikawa et al. would have the same properties as one wherein the polyimide is polymerized before the cyclic compound is added.
9. Regarding claims 21-24:
10. Nishikawa creates a film of the polyimide on a substrate [0034]. The examiner takes the position that the polyimide would possess inherently the transmittance value under the prescribed conditions as claimed. The examiner also takes the position the polyimide would inherently have the glass transition temperature and low water absorption as claimed.

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11. Regarding claims 25-26:

12. The film is placed on a transparent, conductive film [0021]. The conductive film can be made of indium-tin oxide (ITO) [0023]. Applicant discloses that indium-tin oxide would have a resistance as claimed (p12 ln27).

13. Regarding claims 27-29:

14. Nishikawa creates a film on the transparent electrode (indium-tin oxide) side of a glass substrate [0034].

15. Claims 18 and 20-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Rushkin et al. (2004/0161619).

16. Regarding claim 18:

17. Rushkin et al. (hereafter Rushkin) disclose a polyimide precursor composition [0013]. A mixture of dianhydrides can be used [0031]. Examples of suitable dianhydrides include 3,3',4,4'-biphenyltetracarboxylic acid dianhydride, corresponding to the present Formula 2 [0031]. Diamines can conform to formula VII, which overlaps with Applicants Formula 3 [0034-5].

18. The composition comprises γ -butyrolactone and polar solvents such as other lactones [0040].

19. Regarding claim 20:

20. The examiner takes the position that a precursor made in the manner of Rushkin et al. would have the same properties as one wherein the polyimide is polymerized before the cyclic compound is added.

21. Regarding claims 21-23:

22. Rushkin coats a substrate with the precursor [0044]. The thickness of the coating is about 50 micrometers [0045]. The precursor is later cured to a polyimide at its glass transition temperature or higher [0065]. The temperature ranges from 200°-500°C, implying the polyimide coating inherently has a transition temperature above 200°C.

23. Regarding claim 24:

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24. The examiner takes the position that the polyimide coating of Rushkin inherently possesses such low water absorption properties, as the polyimide is the same as Applicant's.

25. Regarding claims 25-26:

26. Suitable substrates include indium-tin oxide [0023]. This corresponds to Applicant's transparent, electrically conductive film. Applicant discloses that indium-tin oxide inherently has a resistance as claimed (p12 ln27).

27. Regarding claims 27-29:

28. The polyimide is coated with a Deep UV photoresist layer [0046]. Such a layer is transparent. Therefore, the indium-tin oxide is on one side of a transparent film (with the polyimide layer in between).

Claim Rejections - 35 USC § 103

29. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

30. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson et al. (4670342).

31. Peterson et al. (hereafter Peterson) disclose polyimide precursors.

32. Regarding claim 18:

33. Example 18 (col 14) contains the following compounds which correspond to Applicant's compound:

Applicant's Claim	Tetracarboxylic dianhydride	Diamine	Polar Solvent	Cyclic Compound
Peterson	BPADA	MDA	MMP*	PC

34. The abbreviations are defined on col 3 ln 55+:

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Abbreviation	Chemical Name
BPADA	2,2-bis[4-(dicarboxyphenoxy) phenyl]propane dianhydride
MDA	p,p'-methylenedianiline
MMP*	N-methyl-2-pyrrolidone
PC	propylene carbonate

*(appears to be a typographical error for NMP)

35. The examiner notes MDA is not the diamine of present Formula 3. However, Peterson discloses "[a] wide variety of diamines are useful" (col 2 ln 44-45). The wide variety from which the diamine can be chosen includes those described in US 3,891,601, which is incorporated by reference into Peterson's disclosure (col 3 ln 33-42). In US 3,891,601, diamines include those defined by formula 3 (col 6 ln 11-62), such as 4,4'-diamino-diphenyl sulfone (col 6 ln 67).

36. Peterson clearly provides motivation to one of ordinary skill that the diamine is not meant to be limited to a specific example such as MDA. At the time of the invention, it would have been obvious to one of ordinary skill in the art to replace the MDA used in Example 18 with another diamine, such as 4,4'-diamino-diphenyl sulfone, in the course of routine experimentation, and in so doing arrive at the presently claimed invention.

37. Regarding claim 19:

38. Peterson's Example 18 follows Applicant's proportions. After preparing the precursor, the solution was 24% solids (col 15 ln 22). The weights of all compounds (A-F) listed sums to 2327g. This implies 582g of solids in the precursor. The following table compares the solvent (A and F), and cyclic compound (D) weights:

	Weight (g)	Mass Parts
solids	582	100
solvent	1235	212
cyclic	423	72.7

39. Regarding claim 20:

40. The examiner takes the position that a precursor made in the manner of Peterson would have the same properties as one wherein the polyimide is polymerized before the cyclic compound is added.

Claim Rejections - 35 USC § 112

41. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

42. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

43. Applicant attempts to claim a polyimide precursor in a product-by-process manner. However, the product cannot be made by the process as written. Applicant attempts to claim a polyimide precursor that is already polymerized, i.e. no longer a precursor. Therefore, it is unclear what Applicant is trying to claim.

Response to Arguments

44. Applicant's arguments filed 13 May 2008 have been fully considered but they are not persuasive.

45. The examiner appreciates Applicants efforts to identify how claims 18-29 relate to now cancelled claims 1-17.

46. Regarding the objection to claims 1-17, Applicant's cancellation of the claims renders the objection moot. The examiner withdraws the objection.

47. Regarding rejections of claims 1 and 3-7 under 35 USC 102(b) by Peterson:

48. The cancellation of the claims renders the rejections moot. The corresponding claims 18-20 are rejected as being obvious under 35 USC 103(a).

49. Applicant argues Peterson does not suggest the use of a diamine including a SO₂ group as found in the present Formula 3 (p8). As the examiner explains above, Peterson teaches the use a variety of diamines, including those found in US 3,891,601, incorporated therein by reference. US '601 provides for a diamine as found in Formula 3.

50. Applicant argues Peterson does not provide a reason for the use of propylene carbonate, and appears to replace it with n-butanol in some examples (p8). The examiner notes Peterson does not need to provide a reason for a particular component's use for the reference to fall under the scope of Applicant's claims. Furthermore, Peterson's use of propylene carbonate in the examples provides

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motivation for one of ordinary skill to use propylene carbonate, regardless of other examples that may not include it.

51. Applicant argues Peterson does not disclose a specific use of a dianhydride conforming to Formula 2. The examiner notes the present claims require a dianhydride conforming to either Formula 1 or 2.

52. Regarding rejections of claims 1 and 3-7 under 35 USC 102(b) by Nishikawa:

53. The cancellation of the claims renders the rejections moot. The corresponding claims 18 and 20-29 are rejected as being anticipated under 35 USC 102(b) by Nishikawa.

54. Applicant argues Nishikawa “merely lists” compounds conforming to Formulas 2 and 3, “but does not disclose use of a specific combination” of the compounds with γ -butyrolactone (p9). Nishikawa teaches each and every element of the rejected claims as required under 35 USC 102(b). The reference need not provide specific examples of Applicant’s invention to anticipate the claims.

55. Applicant argues “[Nishikawa] does not teach or suggest that γ -butyrolactone is selected because of its properties [listed in claims 18 and 21]” (p10). Nishikawa teaches each and every element of the rejected claims as required under 35 USC 102(b). The reference need not provide the same reasons for combination as presented by Applicant. Furthermore, all of the properties listed are inherent to γ -butyrolactone.

56. Regarding rejections of claims 1-5, and 7-17 under 35 USC 102(e) by Rushkin:

57. The cancellation of the claims renders the rejections moot. The corresponding claims 18 and 20-29 are rejected as being anticipated under 35 USC 102(e) by Rushkin.

58. Applicant argues Rushkin “merely lists” compounds conforming to Formulas 2 and 3, “but does not disclose use of a specific combination” of the compounds with γ -butyrolactone (p10). Rushkin teaches each and every element of the rejected claims as required under 35 USC 102(e). The reference need not provide specific examples of Applicant’s invention to anticipate the claims.

59. Applicant argues “[Rushkin] does not teach or suggest that γ -butyrolactone is selected because of its properties [listed in claims 18 and 21]” (p10). Rushkin teaches each and every element of the rejected claims as required under 35 USC 102(e). The reference need not provide the same reasons for

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combination as presented by Applicant. Furthermore, all of the properties listed are inherent to γ -butyrolactone.

60. Applicant notes that Rushkin teaches away from the use of N-methylpyrrolidone (NMP) as solvent, yet the present invention can use NMP (p10). The examiner notes the present claims do not require NMP as a solvent.

61. Regarding the rejections of claims 7 and 11 under 35 USC 112:

62. The cancellation of the claims renders the rejections moot. The corresponding claim 24 incorporates language which satisfies the requirements under 35 USC 112.

63. The corresponding claim 20 does not satisfy the requirements under 35 USC 112. Applicant attempts to claim "[t]he polyimide precursor liquid composition according to claim 18...", but claim 20 subsequently calls for the precursor to be polymerized. By polymerizing the precursor, the composition is no longer the precursor, by definition. It is not clear whether Applicant intends to claim the polyimide precursor or the polyimide polymer.

Conclusion

64. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Freeman whose telephone number is (571)270-3469. The examiner can normally be reached on Monday-Friday 7:30-5:00PM EST (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571)272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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